

CALIFORNIA DIVISION OF MINES AND GEOLOGY
Supplement^{#1} to Fault Evaluation Report FER-5

May 5, 1978

1. Name of faults

San Andreas and Clearwater faults, Leona Valley area.

4. Additional references

Designation: Fairchild C-6500

Type: Vertical stereo, black and white.

Date: 5/16/40

Scale: 1:24,000

Coverage: Much of southern California, including the San Andreas fault between Valyermo and the Carrizo Plain.

Availability: Fairchild aerial photography collection, Geology Department, Whittier College, Whittier, California.

6. Interpretation of aerial photography

The Fairchild C-6500 (1940) photo set was the set most used by myself and other DMG personnel in the Leona Valley study (Kahle and others, 1975). For reasons not altogether known to us, the faults and fault features are more visible on this photo set than on any other single set. I did not make any new interpretations of the nature of the faulting in Leona Valley on the basis of these photos. I instead took these photos along with me in the field, along with a pocket stereoscope, to use as a guide in re-walking some of the faults.

7. Field observations

I re-examined parts of the San Francisquito and Leona Avenue faults (see figures 3a and 3b of this supplement). Although I had seen all of these features before, in 1973 and 1974 when I was assigned to the Leona Valley segment of the San Andreas Project, I decided that it might be worthwhile to re-examine these features in light of the experience and knowledge of faulting that I have gained during the subsequent years. Unfortunately, the re-examination led to no significant new conclusions on my part. (1)

The San Francisquito fault, along the southern side of Leona Valley, is characterized either by no topographic expression or by moderately modified south-facing scarps. Referring to Figure 3, the south-facing scarp occurs mainly along the stretch between Rogers Creek and Bouquet Canyon Road, but, to a lesser extent, across the mouth of Pine Creek Canyon. At Pine Creek Canyon, it is highly modified and extends up to about 2 m in height. The modification here, and to the west, is mainly in the form of a reduction in the steepness of the scarp angle. The present scarp angles are low, in the 8° to 10° range. Immediately to the west of Rogers Creek, the surface has been offset vertically at least 6 m. Farther west, where the fault approaches Bouquet Canyon Road, the offset is in the order of 1 m to 2 m. (2)

I observed no evidence for lateral offset along the fault except at Pine Creek. There, there is an apparent 10 m right-lateral offset in the stream channel where it crosses the fault. There is, however, no specific evidence that this has been caused by fault movement; it is perhaps just coincidence.

The alluvium that underlies the offset surfaces is, to the extent that I could observe it, of two ages: (1) the middle-late Pleistocene Nadeau Gravel, and (2) late Pleistocene older alluvium. I did not observe any offset alluvium that I thought to be as young as Holocene age. This, however, is difficult to determine. It should be mentioned that this terrane is grassland, with moderately good soil development and no useful exposures.

West of section 20, I could find no expression of the San Francisquito fault where it passes beneath the various alluvial units. I made spot-checks of the fault as far west as Bouquet Reservoir.

My re-examination of the Leona Avenue fault yielded no new observations or conclusions beyond what has already been stated by Kahle and others (1975, p. 101). I recalled, however, that the extreme western end of the fault where it converges with Leona Avenue (figure 3b), showed some evidence of having had a closed depression, about one acre in size, until very recently. In the Fairchild C-6500 (1940) photos, there appears to be a closed depression. The area is now overgrown with willows, and is not presently a closed depression. A local resident that I talked with in 1973 said that he thought he remembered the area to be a bog many years earlier. It may be that the area was drained in connection with cultivation and the establishment of orchards in that vicinity.

8. Conclusions

The San Francisquito fault, between Maple Canyon and Bouquet Reservoir, shows no evidence of Holocene movement. East of Maple Canyon, there has definitely been late Pleistocene offset, but the evidence is inconclusive as to whether activity has continued into Holocene time.

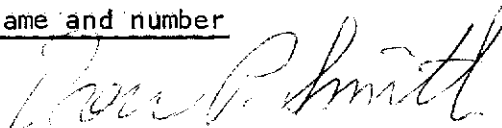
The Leona Avenue fault, to the west of 80th Street West, shows no evidence of Holocene movement, except at the very western end, as is described above. To the east of 80th Street West, the evidence is again inconclusive. J.E. Kahle (personal communication, 4/17/78) said that he believed that some movement had occurred along that segment of the fault during Holocene time. He offered no specific evidence to substantiate this.

Regarding the rest of the Leona Valley segment of the San Andreas fault zone, I have no conclusions that transcend that which is already given by the maps and report of Kahle and others (1975). The mapping of Kahle and others (1975) is compiled on figures 3a, 3b, and 3c. I have annotated these maps according to the data provided by the maps of Kahle and others (1975, plates 1A and 1B). The annotations provide the basis for the zoning recommendations that follow.

9. Recommendations

Figures 4a, 4b, and 4c show my zoning recommendations for the Leona Valley segment of the San Andreas fault. Basically, I recommend the refinement and narrowing of the existing zones. I recommend the complete deletion of the special studies zone along the San Francisquito fault to the west of Maple Canyon. Figures 5a, 5b, and 5c show the existing zoning in the Leona Valley area.

10. Investigating geologists name and number



DREW P. SMITH
Assistant Geologist
May 5, 1978

I concur with the recommendation to zone Sleepy & Valley map (Fig 5b) but feel that regions of Del Sur and Ritter Ridge 552 maps (Fig 5a & 5c) would largely be unnecessary. However, please prepare provisional overlays on all 3 maps before making final decision. ECH
5/12/78

Supplement

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Note: The person who compiled this worksheet (Drew Smith) is also the person who did the mapping in this part of Leona Valley (Kahle and others, 1975).

Figure 3c. Del Sur quadrangle worksheet for Leona Valley segment.

Faulting is compiled from Kahle and others (1975).

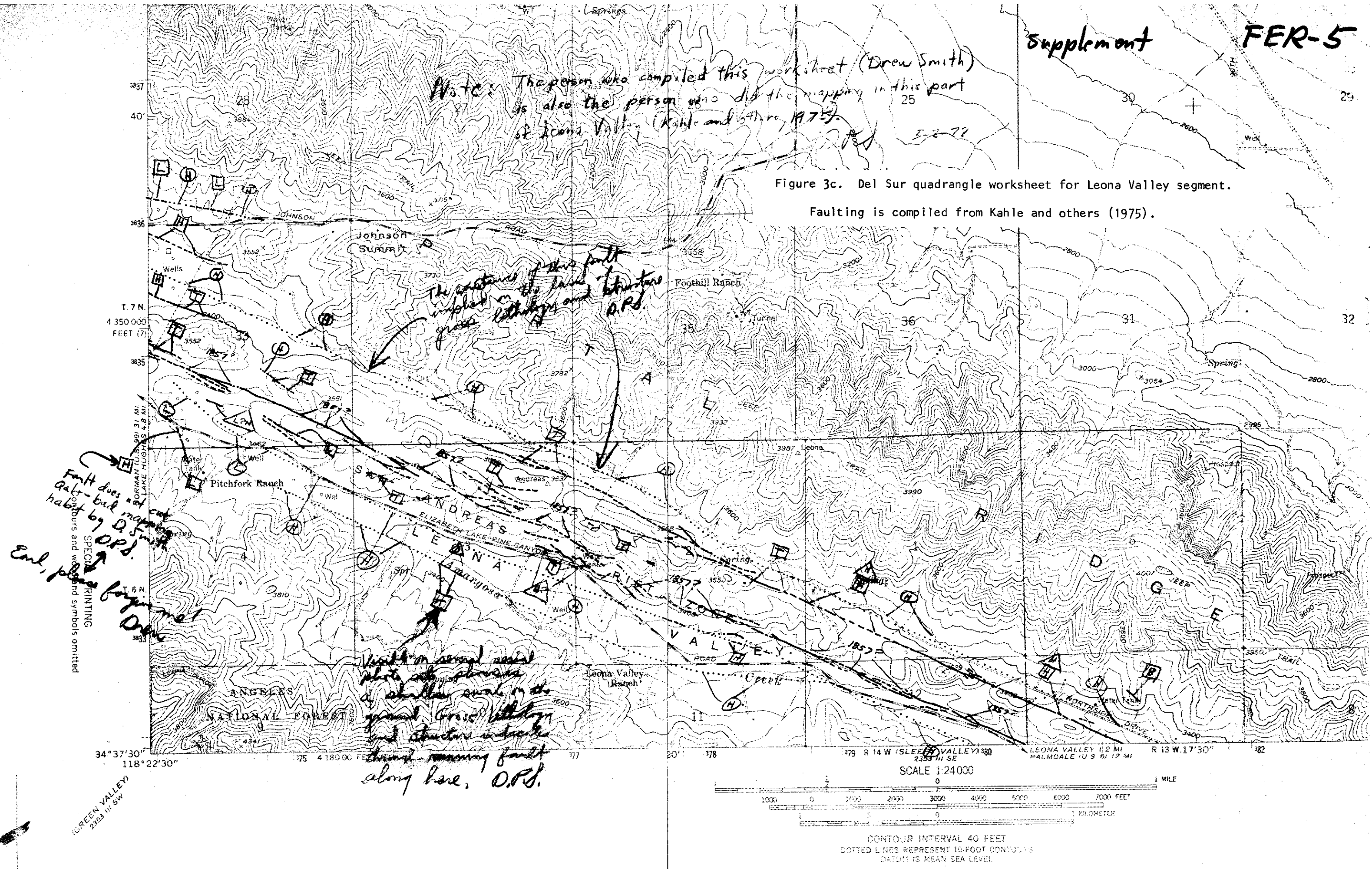


Figure 3b. Sleepy Valley quadrangle worksheet for Leona Valley segment.

Faulting is compiled from Kahle and others (1975).

area of former
closed depression

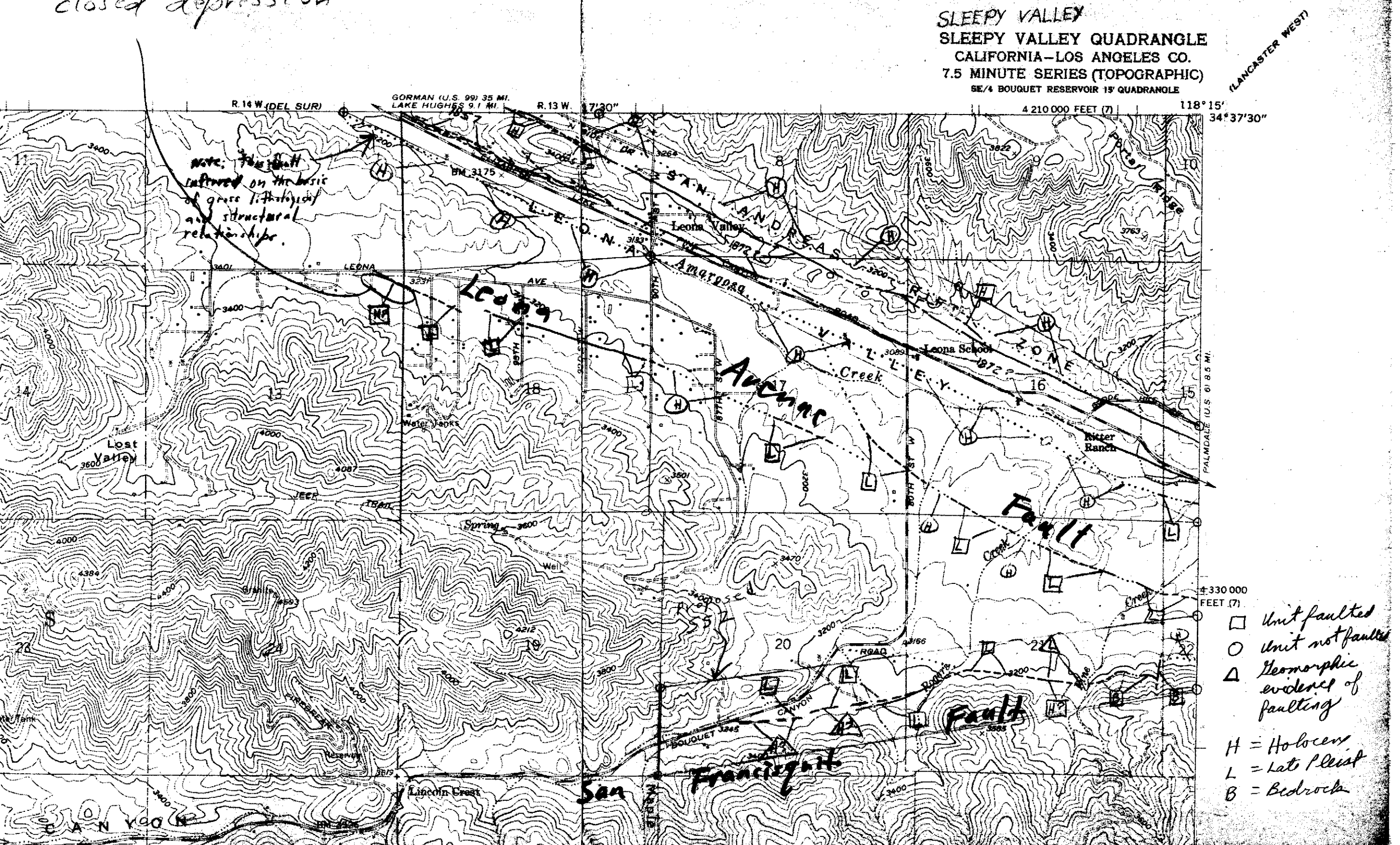


Figure 4a. Recommended zoning for the Ritter Ridge quadrangle, Leona Valley segment.

maybe
leave this
part of 552 FEET
as it was 77
- EHA

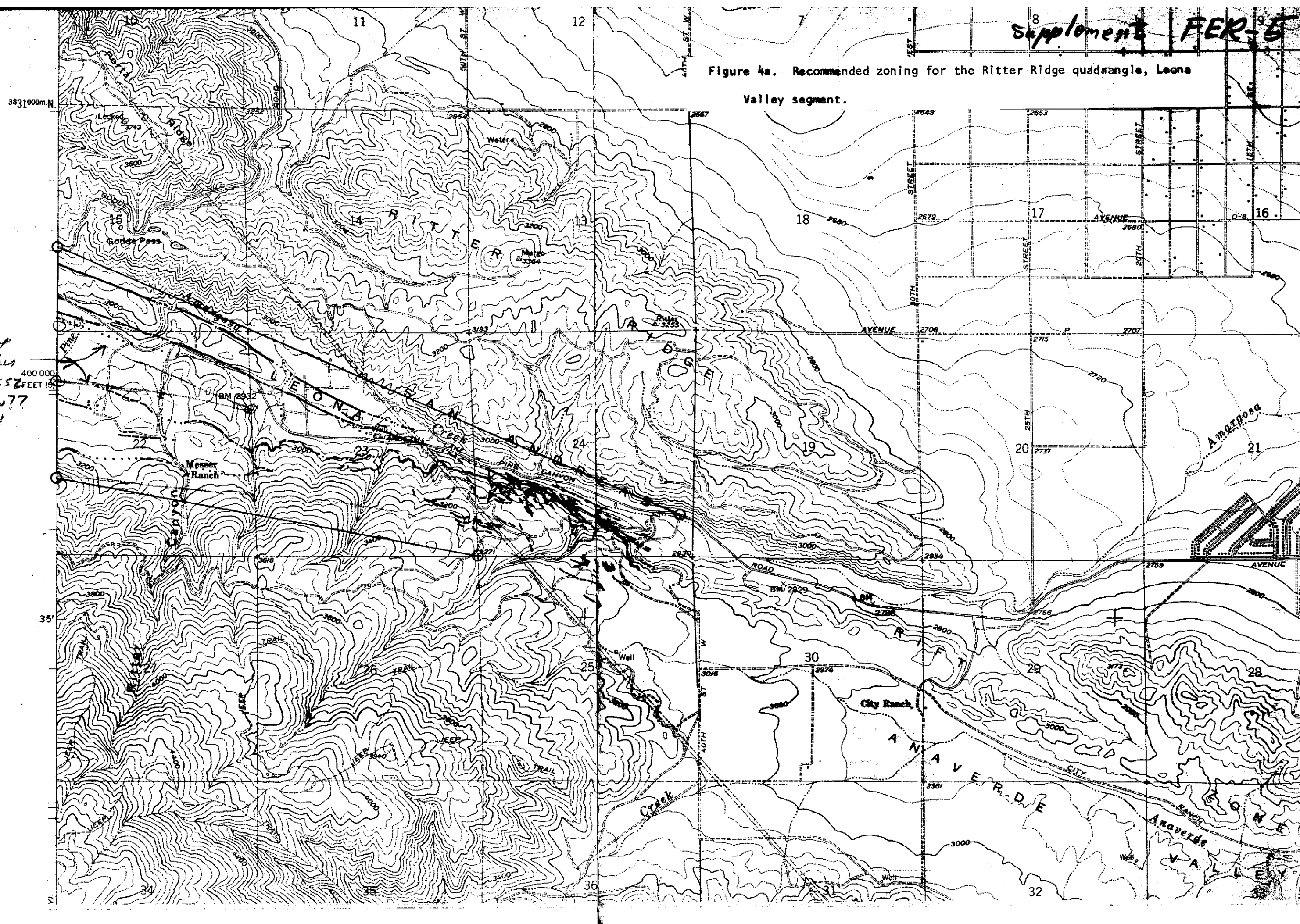


Figure 4b. Recommended zoning for the Sleepy Valley quadrangle,
Leona Valley segment.

Provisional Overlay
5-3-78
Drew Smith

SLEEPY VALLEY QUADRANGLE
CALIFORNIA-LOS ANGELES CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 BOUQUET RESERVOIR 15' QUADRANGLE

(LANCASTER WEST)

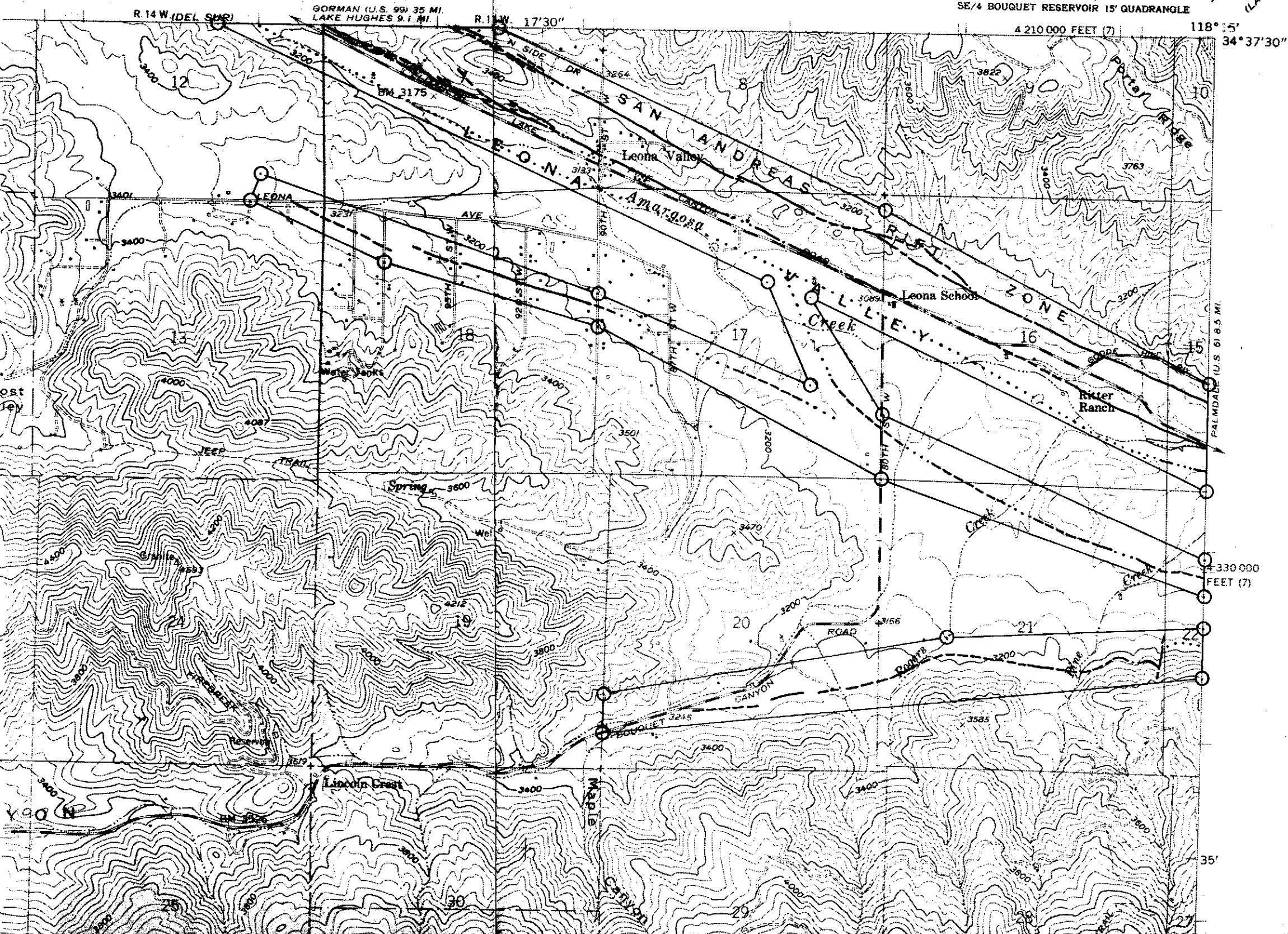
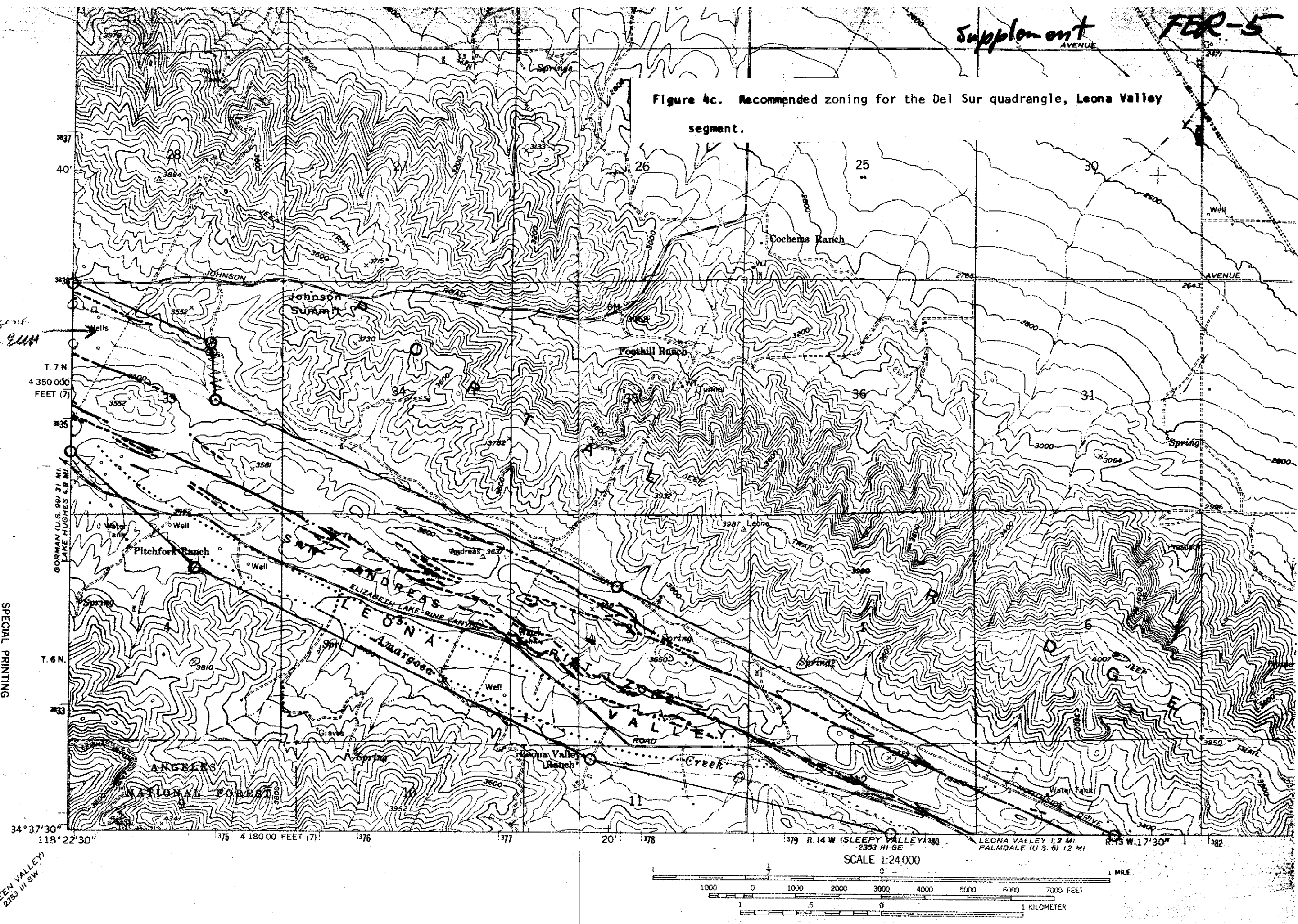


Figure 4c. Recommended zoning for the Del Sur quadrangle, Leona Valley segment.

I see no reason to zone this area - EWH

SPECIAL PRINTING
Contours and woodland symbols omitted



GREEN VALLEY
2353 III SW

118°15' 386000m.E. 1930 000 FEET (5)

12'30"

Figure 5a. Existing zones in the Ritter Ridge quadrangle, Leona Valley segment.

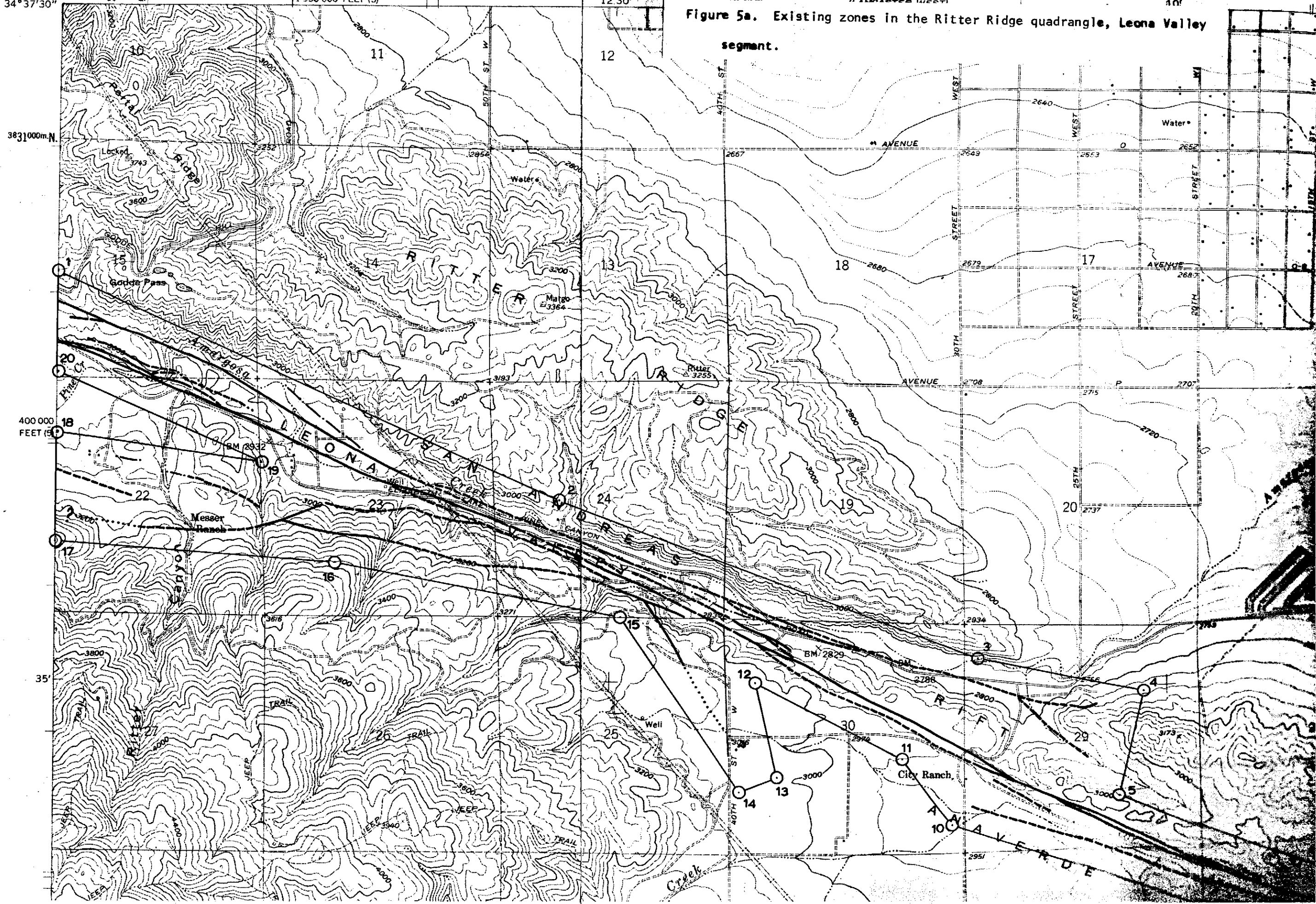


Figure 5b. Existing zones in the Sleepy Valley quadrangle, Leona Valley segment.

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION

SLEEPY VALLEY QUADRANGLE
CALIFORNIA-LOS ANGELES CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 BOUQUET RESERVOIR 15' QUADRANGLE

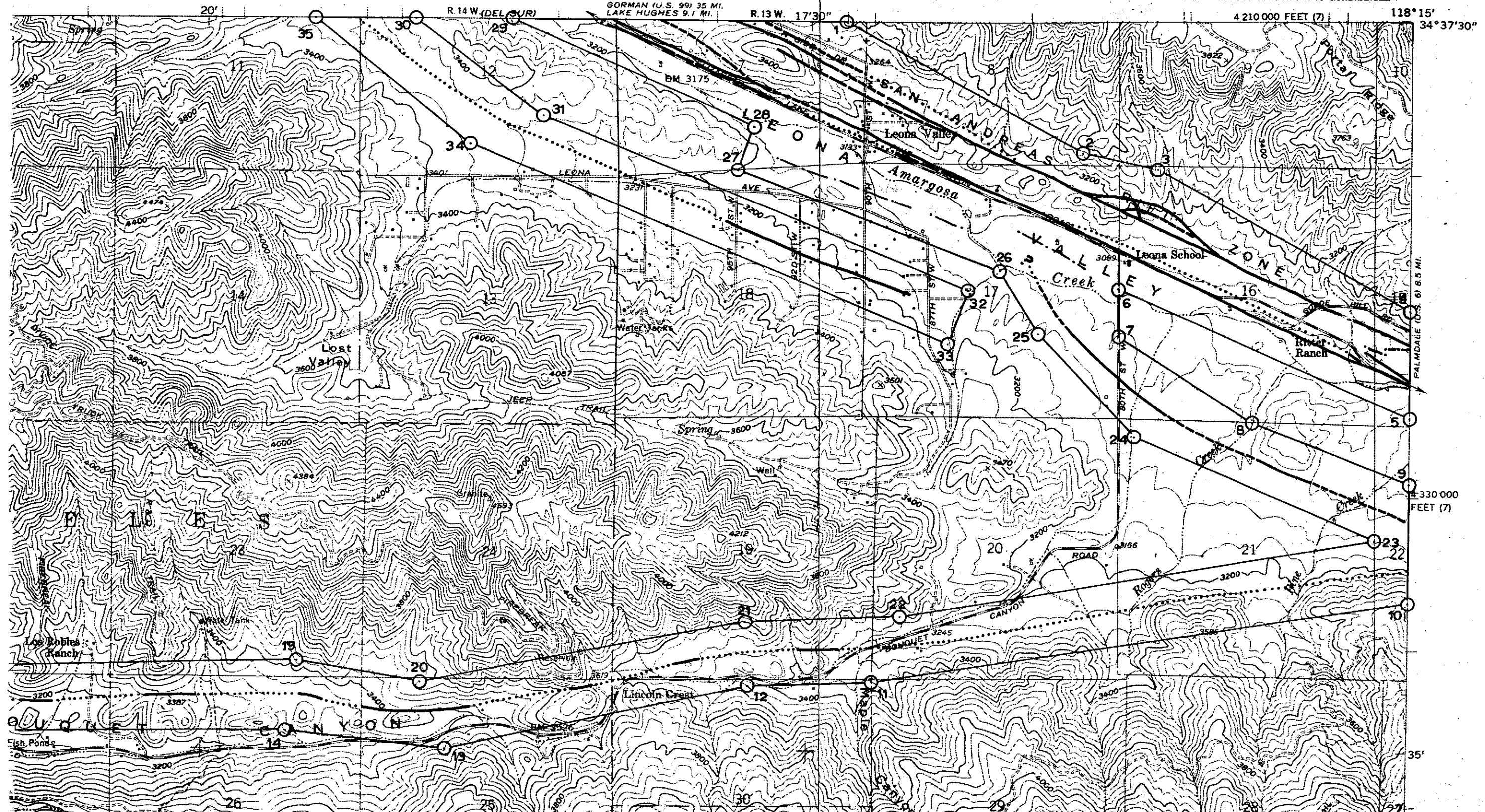


Figure 5c. Existing zones in the Del Sur quadrangle, Leona Valley segment.

